

AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for use on a network, comprising:
~~computing for a path that includes multiple links~~ determining a first color vector for
a path comprised of multiple links between nodes of the network, the first color vector
being determined based on color vectors for the multiple links, each of the color vectors
representing multiple colors that correspond to attributes of the network, the first color
vector indicating that indicates colors that all of the multiple links include; ~~and~~
~~computing for the path~~ determining a second color vector for the path based on the
color vectors for the multiple links, the second color vector indicating that indicates colors
that none of the multiple links include; and
using the first color vector and the second color vector in determining a route
through the network.
2. (Currently Amended) The method of claim 1, ~~further comprising~~ wherein using
comprises considering the path for inclusion in a label switched path (LSP) if the path
includes all colors that must be included in the LSP and does not include any colors that
must be excluded from the LSP.

3. (Currently Amended) The method of claim 1, further comprising:

determining whether the path includes all colors that must be included in a label switched path (LSP) by performing an AND operation on the first color vector and a mask indicating colors that must be included in the LSP; and

determining if a result of the AND operation equals the mask.

4. (Currently Amended) The method of claim 1, further comprising:

determining whether the path includes any colors that must be excluded from a label switched path (LSP) by performing an AND operation on the second color vector and a mask indicating colors that must be excluded from the LSP; and

determining if a result of the AND operation equals zero.

5. (Currently Amended) The method of claim 1, further comprising:

automatically ~~re-computing~~ re-determining the first color vector and the second color vector if ~~a characteristic~~ an attribute of any of the multiple links changes.

6. (Currently Amended) The method of claim 1, further comprising:

automatically ~~re-computing~~ re-determining the first color vector and the second color vector if one or more of the multiple links included in the path changes.

7. (Currently Amended) The method of claim 1, wherein the colors indicate service ~~characteristics~~ attributes of the multiple links.

8. (Currently Amended) The method of claim 1, wherein the network comprises
~~path runs through~~ the Internet.

9. (Currently Amended) A method for use on a network, comprising:
~~calculating~~ determining whether a path ~~including~~ through the network ~~multiple~~
~~links~~ includes all colors that must be included in a label switched path (LSP), wherein the
colors correspond to attributes of the network associated with the LSP, the path comprises
multiple links having color vectors, a color vector for a link represents multiple colors that
correspond to attributes of the network associated with the link, and determining is
performed based on the color vectors for the multiple links; and
~~calculating~~ determining, based on the color vectors for the multiple links, whether
the path includes any colors that must be excluded from the LSP; and
deciding whether to include the path in the LSP based on colors associated with the
path.

10. (Currently Amended) The method of claim 9, wherein deciding comprises
~~further comprising~~ considering the path for inclusion in the LSP if the path includes all
colors that must be included in the LSP and does not include any colors that must be
excluded from the LSP.

11. (Currently Amended) The method of claim 9, wherein determining and determining are in which the calculating is performed automatically.

12. (Currently Amended) The method of claim 9, wherein ~~calculating~~ determining whether the path includes all colors that must be included in the LSP ~~includes~~ comprises:

performing an AND operation on a color vector of the path ~~that indicates colors that all of the multiple links include~~ and a mask indicating colors that must be included in the LSP_i and

determining if a result of the AND operation equals the mask.

13. (Currently Amended) The method of claim 9, wherein ~~calculating~~ determining whether the path includes any colors that must be excluded from the LSP ~~includes~~ comprises:

performing an AND operation on a color vector of the path ~~that indicates colors that any of the multiple links include~~ and a mask indicating colors that must be excluded from the LSP_i and

determining if a result of the AND operation equals zero.

14. (Currently Amended) The method of claim 9, wherein deciding comprises further comprising automatically determining if the path is eligible for inclusion in the LSP based on whether the path includes all colors that must be included in the LSP and whether the path includes any colors that must be excluded from the LSP.

15. (Currently Amended) The method of claim 9, further comprising concurrently ~~performing the calculation of~~ determining whether the path includes all colors that must be included in the LSP and ~~the calculation of~~ determining whether the path includes any colors that must be excluded from the LSP.

16. (Currently Amended) The method of claim 9, wherein it is first determined ~~further comprising first performing the calculation of~~ whether the path includes all colors that must be included in the LSP and, if the path does not include all colors that must be included in the LSP, it is not determined if the path includes any colors that must be excluded from the LSP; or

~~the calculation of~~ wherein it is first determined whether the path includes any colors that must be excluded from the LSP ~~[[,]]~~ and, if the path includes any colors that must be excluded from the LSP, it is not determined if the path includes all colors that must be included in the LSP

~~performing the other calculation only if the first calculation determines that the path includes all colors that must be included in the LSP or excludes all colors that must be excluded from the LSP.~~

17. (Currently Amended) The method of claim 9, further comprising setting-up the LSP.

18. (Currently Amended) The method of claim 9, wherein the path includes stacked LSPs.

19. (Currently Amended) The method of claim 9, wherein the colors indicate service ~~characteristics~~ attributes of the multiple links.

20. (Currently Amended) The method of claim 9, wherein ~~the calculations~~ determining and determining are performed when one or more of the multiple links changes.

21. (Currently Amended) An article comprising a machine-readable medium which stores machine-executable instructions ~~for computing resource color for composite links~~, the instructions causing a machine to:

~~calculate~~ determine whether a path ~~including multiple links~~ through a network includes all colors that must be included in a label switched path (LSP), wherein the colors correspond to attributes of the network associated with the LSP, the path comprises multiple links having color vectors, a color vector for a link represents multiple colors that correspond to attributes of the network associated with the link, and determining is performed based on the color vectors for the multiple links; and

~~calculate~~ determine, based on the color vectors for the multiple links, whether the path includes any colors that must be excluded from the LSP; and

decide whether to include the path in the LSP based on colors associated with the path.

22. (Currently Amended) The article of claim 21, wherein deciding comprises considering further causing a machine to consider the path for inclusion in the LSP if the path includes all colors that must be included in the LSP and does not include any colors that must be excluded from the LSP.

23. (Currently Amended) The article of claim 21, wherein determining and determining are in which the calculating is performed automatically.

24. (Currently Amended) The article of claim 21, wherein calculating determining whether the path includes all colors that must be included in the LSP comprises: includes performing an AND operation on a color vector of the path ~~that indicates colors that all of the multiple links include~~ and a mask indicating colors that must be included in the LSP; and

determining if a result of the AND operation equals the mask.

25. (Currently Amended) The article of claim 21, wherein calculating determining whether the path includes any colors that must be excluded from the LSP comprises: includes

performing an AND operation on a color vector of the path ~~that indicates all of the colors that any of the multiple links include~~ and a mask indicating colors that must be excluded from the LSP_i and

determining if a result of the AND operation equals zero.

26. (Currently Amended) The article of claim 21, wherein deciding comprises automatically determining ~~further causing a machine to automatically determine~~ if the path is eligible for inclusion in the LSP based on whether the path includes all colors that must be included in the LSP and whether the path includes any colors that must be excluded from the LSP.

27. (Currently Amended) The article of claim 21, wherein determining and determining are performed ~~further causing a machine to concurrently determine whether the path includes all colors that must be included in the LSP and determine whether the path includes any colors that must be excluded from the LSP.~~

28. (Currently Amended) The article of claim 21, wherein it is first determined ~~further causing a machine to first perform the calculation of~~ whether the path includes all colors that must be included in the LSP and, if the path does not include all colors that must be included in the LSP, it is not determined if the path includes any colors that must be excluded from the LSP; or

~~the calculation of wherein it is first determined~~ whether the path includes any colors that must be excluded from the LSP[[,]] and, if the path includes any colors that must be excluded from the LSP, it is not determined if the path includes all colors that must be included in the LSP

~~perform the other calculation only if the first calculation determines that the path includes all colors that must be included in the LSP or excludes all colors that must be excluded from the LSP.~~

29. (Currently Amended) The article of claim 21, further comprising instructions that cause the ~~causing a~~ machine to set up the LSP.

30. (Currently Amended) The article of claim 21, wherein the path includes stacked LSPs.

31. (Currently Amended) The article of claim 21, wherein the colors indicate service ~~characteristics~~ attributes of the multiple links.

32. (Currently Amended) The article of claim 21, wherein determining and determining ~~the calculations~~ are performed when one or more of the multiple links changes.

33. (Currently Amended) An apparatus comprising:

~~a mechanism configured~~ a memory that stores executable instructions for use in routing to route data along a path of a network between devices configured to connect to a connected to the network; and

a processor that executes the instructions to: ~~process accessible by the mechanism that is configured to automatically compute two color vectors for a path running across the network and including multiple links~~

determine whether a path through the network includes all colors that must be included in a label switched path (LSP), wherein the colors correspond to attributes of a network associated with the LSP, the path comprises multiple links having color vectors, a color vector for a link represents multiple colors that correspond to attributes of the network associated with the link, and determining is performed based on the color vectors for the multiple links;

determine, based on the color vectors for the multiple links, whether the path includes any colors that must be excluded from the LSP; and

decide whether to include the path in the LSP based on colors associated with the path.

34. (Currently Amended) The apparatus of claim 33, wherein determining and determining are performed ~~the process is also configured to perform the automatic computing~~ if one or more of the multiple links changes.

35. (Currently Amended) The apparatus of claim 33, wherein deciding comprises considering the mechanism is also configured to consider the path for inclusion in a label switched path (LSP) across the network if the path includes all colors that must be included in the LSP and does not include any colors that must be excluded from the LSP.

36. (Cancelled)

37. (Currently Amended) The apparatus of claim ~~36~~ 33, wherein determining whether the path includes all colors that must be included in a label switched path (LSP) includes comprises:

performing an AND operation on a color vector of the path ~~that indicates colors that all of the multiple links include~~ and a mask indicating colors that must be included in the LSP; and

determining if a result of the AND operation equals the mask.

38. (Cancelled)

39. (Currently Amended) The apparatus of claim ~~38~~ 33, wherein determining whether the path includes any colors that must be excluded from a label switched path (LSP) includes comprises:

performing an AND operation on a color vector of the path ~~that indicates all of the~~
~~colors that any of the multiple links include~~ and a mask indicating colors that must be
excluded from the LSP_i and
determining if a result of the AND operation equals zero.

40. (Cancelled)

41. (Currently Amended) The apparatus of claim 33, wherein the ~~mechanism is~~
~~also configured to notify~~ processor executes instructions to notify other devices on the
network of the computed first and second color vectors.

42. (Currently Amended) The apparatus of claim 33, wherein the processor
executes instructions to ~~mechanism is also configured~~ to set up a label switched path
across the network.

43. (Currently Amended) The apparatus of claim 33, wherein the instructions
comprise process includes software to automatically ~~compute~~ determine the color vectors.